Quality Control

mgml 12/04/69

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W/O:			WC	ORK ORDER CHANGES					
DATE	STEP	PR	OCEDURE CHAI	NGE	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
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Part No		PAR #:							
Part No		solution:	Disposition		A: N/C	Closed:			
NCR:	Re	solution:	Disposition	n: (A: N/C (CE (NC	Closed: R)		Date:	
		solution:	Disposition	ER NON-CONFORMANC	A: NC (CE (NC	Closed:			
NCR:	Re	solution: Description of NC	Disposition WORK ORDE	Corrective Action Section B	A: N/C (Closed:	cation	Date:	Approval

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QC

Quality Control

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ang 12/04/09

Dart Aerospace Ltd

W/O:			V	VORK ORDE	R CHANGE	S					
DATE	STEP	PRO	CEDURE CH	IANGE			Ву	Date / ,	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
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Part No		PAR #:									
	R	esolution:	Disposit	ion:	. –	QA:	WC Clo	sed:		Date: _	· · · · · · · · · · · · · · · · · · ·
NCR:		V	VORK OR	DER NON-C	ONFORMA	NCE	(NCR)				
DATE	STEP	Description of NC Section A	Initial Chief Eng	Corrective A	ction Section Description hief Eng		Sign & Date	Verific Section		Approval Chief Eng	Approval QC Inspector
			Office Eng		iller Eng		Date				· ·
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Work Order ID 82577 Page 3 April-03-12 8:37:52 AM D212-664-101TRN Item ID: Accept *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Turning Detail **Start Date:** Start Qty: 1.00 03/04/2012 Cust Item ID: **Customer:** Reference: Run Start Process Plan: **Approvals:** Date: Tooling: Date: Date: SPC (Y/N): Date: Sequence ID/ Operation Tool ID Set Up/ Tool # Plan Accept Reject Reject Insp. Work Center ID Description **Run Hours** Code Qty **Qty** Number Stamp 140 QC8- Inspect parts - second check 0.00 *140* QC 0.00 Memo Quality Control 0.00 *145* Crosstubes 0.00 Memo Crosstubes GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY. 150 Crosstubes Chemical Conversion 0.00 *150*

0.00

HandFXtube

Hand Finishing Crosstubes

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Dart Aerospace I	_t(t
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W/O:			WORK ORDER CHANGES								
DATE	STEP	PROC	EDURE CH	IANGE	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector		
Part No	:	PAR #:	_ Fault Ca	tegory:	NCR: Ye	s No D	QA:	Date: _			
	- 'R	esolution:	Disposit	ion:	QA: N/C	Closed: _		Date: _			
NCR:		W	ORK OR	DER NON-CONFORMA	NCE (NO	CR)					
DATE	STEP	Description of NC		Corrective Action Section			ification	Approval	Approval		
DATE	SIEP	Section A	Initial Chief Eng	Action Description Chief Eng	Sigi Da		ection C	Chief Eng	QC Inspector		

0.00

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QC

Quality Control

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Dart Aerospace Ltd WORK ORDER CHANGES W/O: **Approval Approval** DATE STEP **PROCEDURE CHANGE** By Date Qty Chief Eng / QC inspector Prod Mgr 1/24-10/160 Part No: ______ PAR #: ____ Fault Category: _____ NCR: Yes No DQA: ____ Date: ____ Resolution: _____ Disposition: _____ QA: N/C Closed: ____ Date: ____

NCR: WORK ORDER NON-CONFORMANCE (NCR)									
		Description of NC		Corrective Action Section B	Verification	Approval	Approval		
DATE	STEP	Section A	Initial Action Description Sign & Chief Eng Chief Eng Date		Sign & Date	Section C	Chief Eng	QC Inspector	
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Picklist Print

April-03-12 8:37:56 AM

Work Order ID: 82577

82577 D212-664-101TRN

Parent Item Name: Crosstube Turning Detail

D212-664-101TRN

Start Date: 03/04/2012

Required Date: 17/04/2012

Start Qty: 1.00

Required Qty: 1.00

Comments:

Parent Item:

IPP Rev:A 08-03-06 new issue DD verified by:ec

IPP Rev B 08.04.02 removed Polish EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status	
D6005-128		Manufactured	No			120	Each	33.0000	1	1				
D6005-12	8								**	•				

Crosstube Material

Location Loc Qty Loc Code 33 33

Page 1

Dart Aerospace Ltd

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W/O:		· · · · · · · · · · · · · · · · · · ·	٧	VORK ORDER CH	ANGES	:	<u>.</u> ·	· · · · · · · · · · · · · · · · · · ·		
DATE	STEP	PROC	EDURE CH	IANGE		Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
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Part No		PAR #:								
	Re	esolution:	Disposit	iōn:	QA	: N/C CI	osed:		Date: _	
NCR:		We	ORK OR	DER NON-CONFO	RMANC	(NCR	(1)			
DATE	STEP	Description of NC		Corrective Action	Section B		Verific		Approval	Approval
DAIL	SIEF	Section A	Initial Chief Eng	Action Descrip Chief Eng	otion	Sign & Date	Section	on C	Chief Eng	QC Inspector
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DART AEROSPACE LTD	Work Order:	82577
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number:	D212-664-141
Inspection Dwg: D212-664-141 Rev: D		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

X	First Article	Prototype
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	nspection Sheet awing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
	0.200	+/-0.010	,200			imirc	CWCOG
	R0.063	+/-0.010	-063			RG	
	2.740	+0.005/-0.000	2.711			mirc	CWC-04
	5.097	+/-0.030	5.095			1	
	2.304	+0.005/-0.000	叉,767			1	
_	2.340	+0.005/-0.000	2,373			_/	
EA	2.398	+0.005/-0.000	2.401				
SIDE	2.448	+0.005/-0.000	2.452				
•	2.498	+0.005/-0.000	2,503	//		- 	
	2.549	+0.005/-0.000	2-554				
	2.599	+0.005/-0.000	2.603	1		_	
	2.671	+0.005/-0.000	2.673				
	2.701	+0.005/-0.000	2.703			1	
	0.200	+/-0.010	200			vern	010/1-04
	R0.063	+/-0.010	003			Rle	
	2.740	+0.005/-0.000	2.741	/		vern	CNL-05
. [5.097	+/-0.030	5.697			1	
	2.304	+0.005/-0.000	2.368				
_ [2.340	+0.005/-0.000	2-343				
ш В	2.398	+0.005/-0.000	2.402				
SIDE	2.448	+0.005/-0.000	2.452				
	2.498	+0.005/-0.000	2,502	//			
	2.549	+0.005/-0.000	2.554				
	2.599	+0.005/-0.000	2.603		1		
	2.671	+0.005/-0.000	2.673				
	2.701	+0.005/-0.000	2.704			<u> </u>	
\bot	126.514	+/-0.020	126.514	6		tupo	91-mil-02
Vlea	sured by:	M.L/ Au	dited by:		Pi	ototype Appr	

Date: 12/04/05 Date: 12-4-9 Date: N/A

Rev	Date	Change	Revised by	Approved
Α	05.04.27	New Issue (P/O D412-664-101)	KJ/JLM	
В	06.03.15	Tolerance revised for 5.097 per Dwg Rev update	KJ/JLM	1
С	07.05.28	Dwg Rev updated	KJ/JLM	
D	10.02.02	Dimension 126.514 was 126.51	KJ KJ	 kl -

Item	Qty -141	Qty -141 B	Part Number	Description
1	Х		D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
2		Х	D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3	1	1	D6005-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	4	4	MS21920-25	CLAMP (OR MS21920-26)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

D

С

1) MATERIAL: MANUFACTURED FROM D6005-128

FINISHED LENGTH = 126.514±0.020

CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 PAINT OUTSIDE PER DART QSI 005 4.2

- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS
- WEIGHT: D212-664-141 = 33.6 lbs (PER IIN-D212-664) D212-664-141B = 33.6 lbs (PER IIN-D212-664)

8) PARTIS SYMMETRIC ABOUT CENTERLINE.

- 9) RUN CUTTER OFF PART, BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE. SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY, CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY **RETURN TO ENGINEERING** INCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE

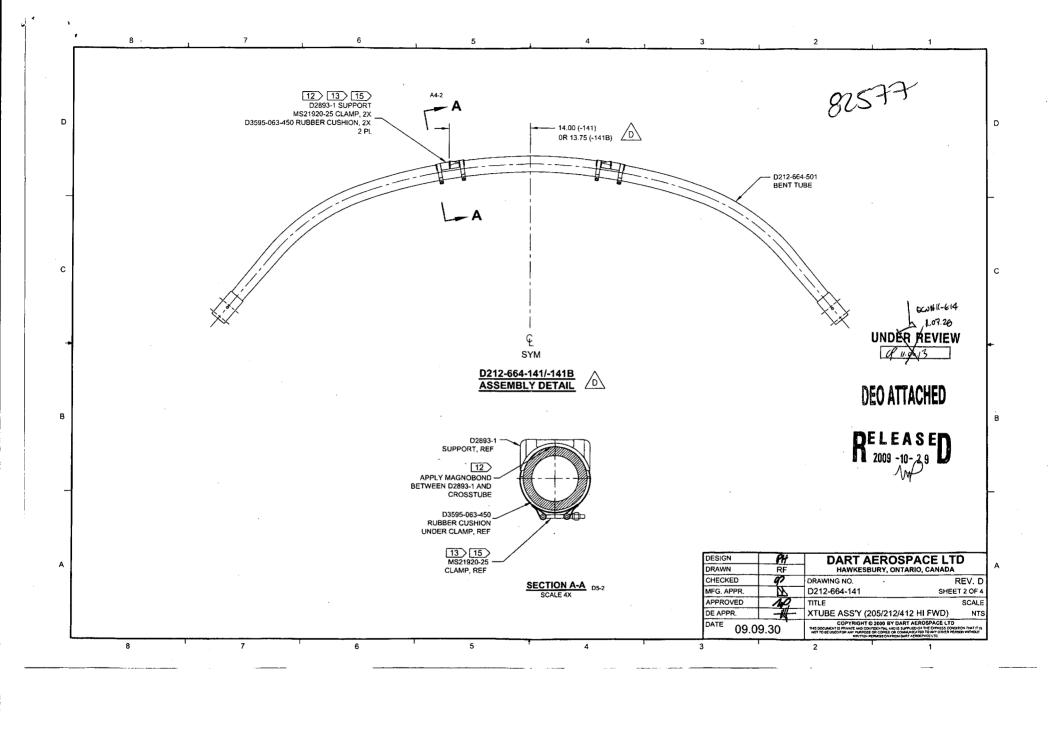
WORK ORDER MCJ REMOVED FRAM WIDEL REVIEW PER

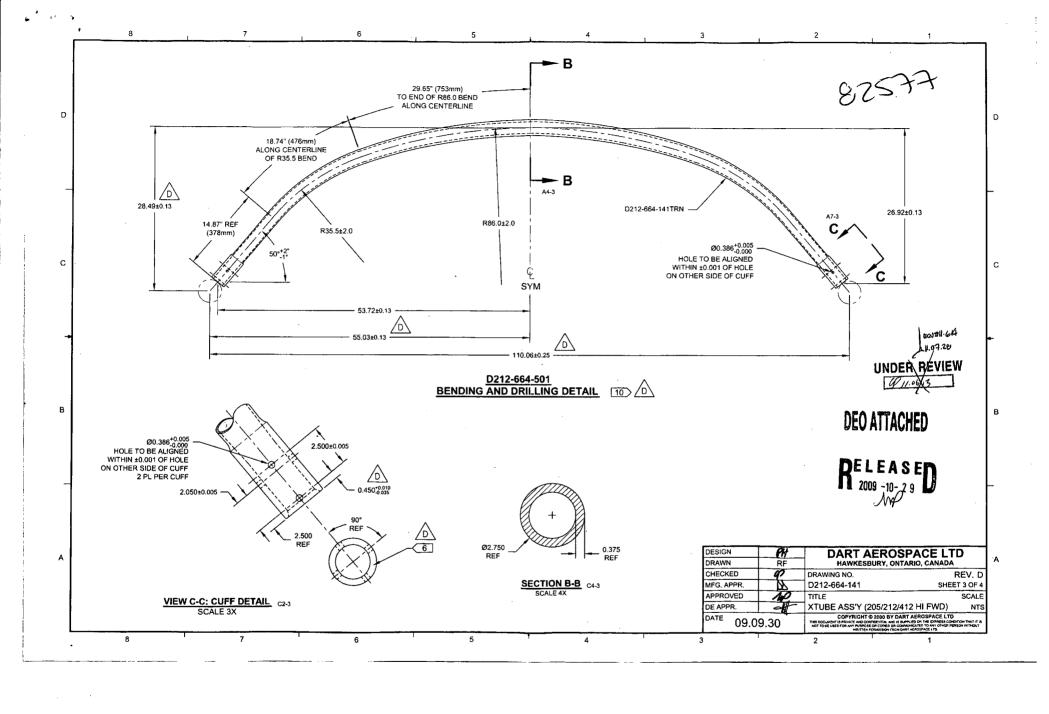
12/04/03 UNDER REVIEW GEN HIT-GIA

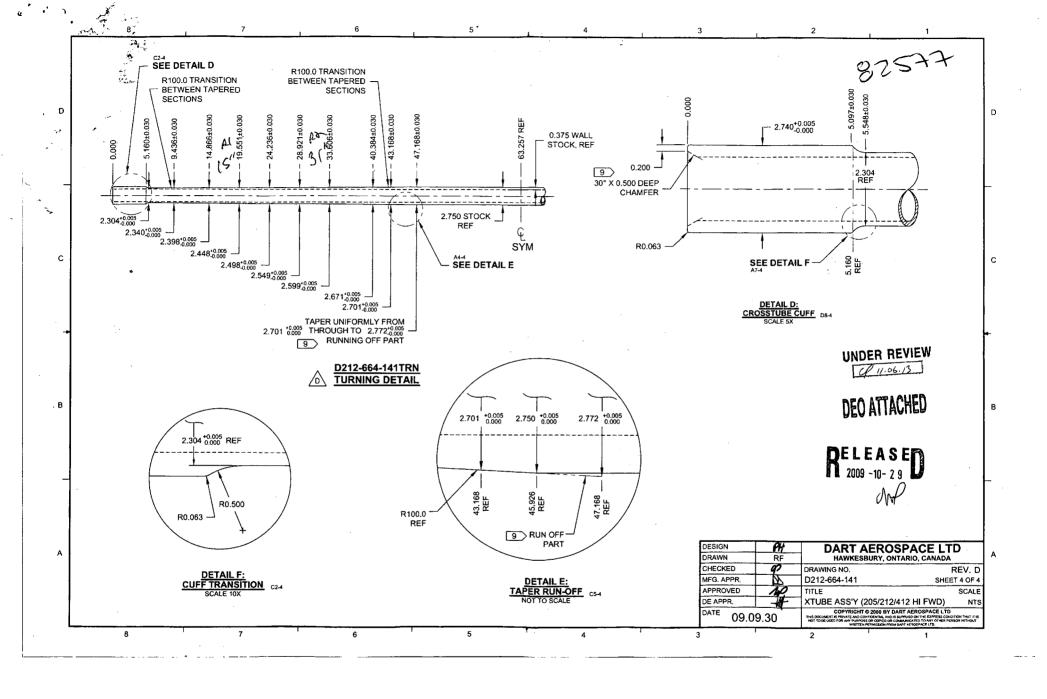
DEO ATTACHED

REFORMAT/REVISE GENERAL NOTES/PART LIST: 09.09.30 REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B6-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 07.03.08 6398, CUSHION, REVERSE CLAMPS ADD HOLES FOR COMPATABILITY WITH BHT/AA 05.02.04 SKIDTUBES Α NEW ISSUE ΡН 00.12.12 REV. DESCRIPTION BY : DATE DESIGN DART AEROSPACE LTD DRAWN HAWKESBURY, ONTARIO, CANADA RE CHECKED DRAWING NO. REV. D MFG. APPR. D212-664-141 SHEET 1 OF 4 APPROVED TITLE SCALE XTUBE ASS'Y (205/212/412 HI FWD) DE APPR NTS COPYRIGHT © 2000 BY DART AEROSPACE LTD
IT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONCITICATED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PORSO DATE 09.09.30

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DRAWING NO.	TITLE		REV. D	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D212-664-141	XTUBE ASS	SY (205/212/4	12 HI FWD)	ENGINEERING ORDER	D212-664-141-D-1	SHEET 1 OF 2	NTS
DRAWN	<u> </u>	CHECKED	P	MFG. APPR.	APPROVED AND,	DE APPR.	
DATE 11.0	14.07	DATE	11,047,11	DATE ((.0\(.(Z	DATE 11/04/12	DATE 11.04.17	2_

PURPOSE:

ADD AN INSPECTION WINDOW TO UNDERSIDE OF CROSSTUBE.

CHANGE:

NOTES 2 OF SHEET 1 IS AMENDED AS FOLLOWS:

IS:

FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND

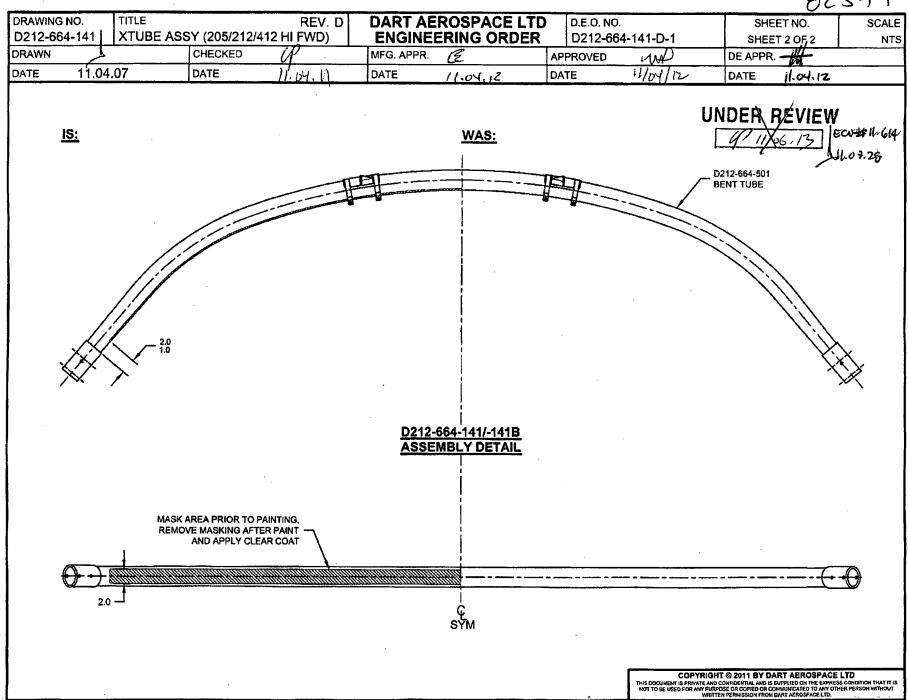
PAINT OUTSIDE PER DART QSI 005 4.2 REMOVE MASKING AND APPLY CLEAR COAT

WAS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

PAINT OUTSIDE PER DART QSI 005 4.2



82577

DRAWING NO.	TITLE	REV. D DART AEROSP	PACE LTD D.E.O. NO.	SHEET NO.	SCALE
D212-664-141	CROSSTUBE ASS'Y (205 HI F			-D-2 SHEET 1 OF 1	NTS
DRAWN ()	CHECKED A>S	MFG. APPR	APPROVED MA	DE APPR.	-
DATE 11.0	7.15 DATE /1.07.	DATE 11.07			7.21

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

item	Qty -141	Qty -141B	Part Number	Description
7	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023
			·	ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,
				TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2893-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04° TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

WAS:

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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ULTRA SONIC MEASURMENTS					
Side	LOCATION on tube	R1 , 1 G 3	R2 . 268	R3	R4
<u> </u>		.216	. 311		
Α		- 230	.289		

	.216	,301	
В	- み 05	.287	
	702	-293	1
	. 214	• 308	
		Part number	82577
		Batch number	212-664-101
		Measured By	SMM.L